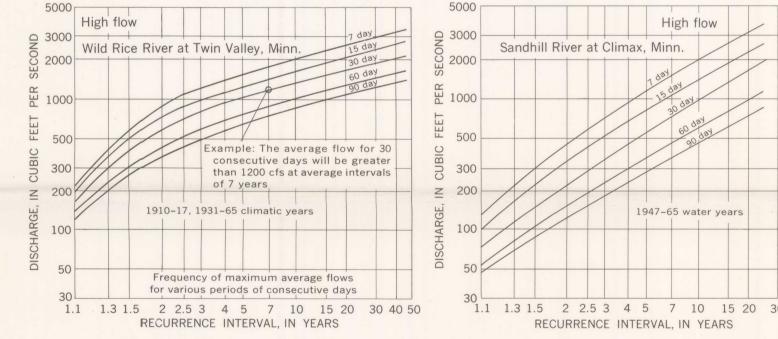


Find the recurrence interval of a flood of 1,200 cfs on the Sandhill River at a site having a drainage area of 310 sq mi, of which 2 percent is lakes. 1. The 2 percent curve (b) in diagram (B) shows that for a drainage area of 310 sq mi the mean annual

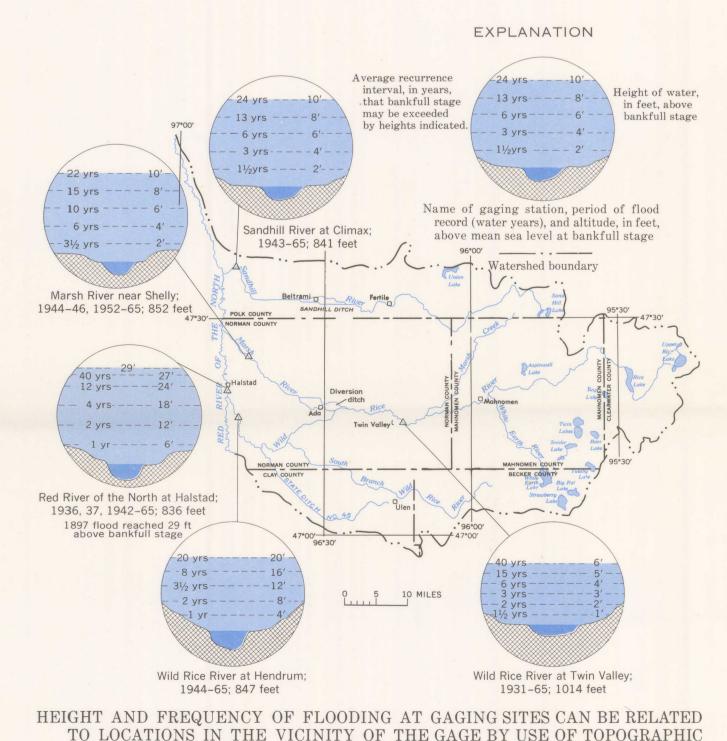
- 2. The ratio of the 1,200 cfs flood to the mean annual flood of 480 cfs is 1,200/480 or 2.50.
- 3. Entering diagram (C) with a ratio of 2.50, the frequency curve (d) shows that the 1,200 cfs flood will occur on an average once every 20 years.
- versing the procedure. Frequency and relation curves from Prior and Hess (1961). THE RECURRENCE INTERVAL OF A FLOOD OF SELECTED MAGNITUDE, OR THE MAGNITUDE OF A FLOOD AT A SPECIFIED RECURRENCE INTERVAL CAN BE DETERMINED BY USE OF DRAINAGE AREA (MAP A, FOR SELECTED SITES),

RELATION CURVES (B), AND FLOOD-FREQUENCY CURVES(C). The magnitude of floods is affected by the area of lakes in the drainage basin; flood peaks are proportionately smaller on drainage areas that have a large percentage of lakes. The total acreage inundated in the vicinity of the Marsh and Wild Rice Rivers during the 1950 and 1965 floods were about equal, although a greater proportion of the flooded area occurred near the Red River of the North in 1965. Some previous floods exceeded those of 1950 and 1965 at some places in the watershed. Although

areas are from snowmelt and spring rains, the maximum flood of record on the Wild Rice River at Twin Valley occurred in July. Floods on small drainage areas often result from heavy local thunderstorm rainfall. The channel modification on the Wild Rice and Marsh Rivers is designed to provide capacity for a flood occurring once in 10 years on the average. The ditching and channel modification on the Sandhill River provides for a 15-year flood. Design capacity of channels obtained from Corps of Engineers, St. Paul District.



MOST OF THE MAXIMUM FLOWS ON THE MAJOR STREAMS IN THE WATERSHED ARE FROM SNOWMELT, AUGMENTED AT TIMES BY SPRING RAINS, ALTHOUGH LESS FREQUENT SUMMER FLOODS CAUSING CROP DAMAGE ARE MOST DESTRUCTIVE.—Damages from high water are related to the height, duration, frequency, and season in which flooding occurs. These factors are considered in the design of flood-control reservoirs, and the high-flow frequency curves are useful in solving problems of reservoir design and operation. Rises are more flashy on the Sandhill than the Wild



TO LOCATIONS IN THE VICINITY OF THE GAGE BY USE OF TOPOGRAPHIC MAPS TO DETERMINE CHANNEL SHAPE.—Peak flows on streams in the upper third of the watershed are influenced by natural storage in lakes and little overbank flooding occurs. In the lake plain overbank flooding of large areas occurs more frequently because of flat topography. The stage of the Red River of the North at Halstad is partly controlled by reservoirs on upstream tributaries.

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flow for the Red River of the North at Fargo, D, (1918-19,